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ABSTRACT

Contemporary research on test anxiety shows that there are a number of sources of such anxiety: expectations of parents or teachers; association of grades with personal worth; fear of alienating parents, family, or friends; a feeling of lack of control over one's life. This paper discusses these sources of test anxiety, reviews some of the manifestations or symptoms of such anxiety that teachers can learn to recognize (e.g., apathy, displaced anger, physical displays of panic), and delineates ways in which teachers and counselors can remediate performance anxiety (e.g., through role modeling, rationalized test design, behavioral teaching methods, behavior modification techniques). (Author/CS)

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REDUCTION OF TEST ANXIETY IN STUDENTS ENROLLED IN MATHEMATICS COURSES: PRACTICAL SOLUTIONS FOR COUNSELORS

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There are a number of sources of stress that adolescents can and often do experience as they make the transition from childhood to adolescence. The physiological, psychological and social changes can affect even the most intelligent and mature adolescent. Worrying about one's bodily dimensions or sexual development can produce inordinate amounts of stress, especially if the adolescent is a late developer. The association of grades and school performance with personal worth is a major source of stress, Leffingwell (1977). Interpersonal anxiety can be evidenced in an adolescent's excessive concern with the quality of interaction with significant people in his/her life. The effort to integrate family and personal values with those of the peer group can be a source of social stress to students. Each type of stress can and often does have deleterious effect on academic and interpersonal behavior.

A perusal of contemporary research on test anxiety shows that there are a number of sources of anxiety that interfere with students' ability to achieve at levels commensurate with the ability in mathematics.

In addition, there exist various suggestions for the remediation of test anxiety in mathematics students including Systematic Desensitization (Leffingwell, 1977), systematic desensitization combined with study skills training (Lent & Russell, 1978), structured psychodrama and systematic desensitization (Kipper & Giladi, 1978), anxiety management training and systematic desensitization (Deffenbacher & Shelton, 1978), bio-feedback and cue-controlled relaxation (Counts et al, 1978), and group counseling (Hendel

and Davis, 1978). There remains a need for remediation techniques that will have positive impact on teachers and students in the classroom. The primary purpose of this article is to provide counselors with practical and rational suggestions to help teachers and students reduce the incidence of test anxiety in mathematics courses.

DEFINITION OF TEST ANXIETY

Test anxiety can be defined as the anticipation (realistic or not) of some unpleasant threat which is related to a situation that is perceived as a test. A test can be equated, by the anxious person, with writing research papers, giving oral reports in front of an audience, working problems on the blackboard, as well as being evaluated on the basis of written objective tests. Mathematics anxiety is specifically related to being evaluated on the knowledge and performance of mathematics ability, regardless of the method of evaluation.

CAUSES OF TEST ANXIETY

The causes of test anxiety vary with the individual student, but can be typically explained through the explanation of four concepts. First, test anxiety can be a learning behavior that is the result of expectations of parents, teachers or significant others in the student's life. For example, a student might have been told to expect to have trouble in the Algebra class because one or both parents had trouble with the same course. Second, it can be an association of grades with personal worth. For example, an anxious student typically says, "If I make an A, I am a good person; and if I make a C, I'm a dummy". The association, although faulty, is realistic to the anxious person. A third possible

cause of test anxiety can be a fear of alienating parents, family or friends because of poor performance or "imperfect" academic ability. A typical rumination of the anxious student is, "What will people think of me if I don't do well in this class?" In essence, the cause of performance anxiety in students can include any one of the above mentioned causes, a combination of those causes, or any other factors that pose significant threat to the individual. A fourth cause of test anxiety can stem from a feeling of a lack of control and inability to change ones present life situation. For example, an anxious person might take a passive stand by saying, "Things just happen to me."

RECOGNITION OF TEST ANXIETY

How can teachers recognize anxiety in mathematics classes? What are typical test anxious students like? They are individuals whose overt and covert behavior modifies when they are faced with the imminent possibility of a test. The performance anxiety can be overtly manifested in a number of ways. For example, students might begin pulling on their hair at the back of the head or twisting hair into curls when the teacher announces the imminent occurrence of a test. The same student under similar conditions might develop palsy in the hands or feet, facial tics, a rash around the face and neck or cold sweats. The mere thought of taking a test and the accompanying feeling of panic might elicit a profane word or phrase from a student who is ordinarily very proper and discreet in the use of language. When confronted and asked for an explanation for the use of an expletive, it is not uncommon for the anxious person to not remember cursing. If the teacher persists in chastising the student for the profanity or is accusatory in tone, the product tends to result in even more anxiety and eventually feelings

of resentment and frustration on both sides escalate. In addition to anxious verbal behavior, a student under stress might react in non-verbal ways such as the repetitive drawing of straight lines, chastising a student in close proximity, breaking pencils, hitting lockers, or in general, displacing frustration on people or objects.

One of the most difficult overt sysmptoms of test anxiety to diagnose is apathy. Too many times teachers misinterpret apathy as the student not caring, not "giving a darn" or having a "bad attitude". The threat of not being able to cope with an algebra test can produce feelings of anxiety which are typically overtly manifested in the self-protective defense mechanism of withdrawal (eg. apathy), or in overt symptoms such as crying, wringing of hands or any other of the above mentioned symptoms.

REMEDIATION OF TEST ANXIETY

A perusal of the contemporary research suggests that performance anxiety can be remediated in the following ways:

1. The teacher can model a supportive, non-threatening behavior and focus attention on students that represent good models of learning. An example of modeling is use of students role playing ways to calm themselves down during tests. In addition, self-disclosure by the teacher or a student of how one person has overcome an anxious reaction, can be helpful.
2. The teacher can provide information in the form of study guides and programmed materials so that students have reasonable idea of what is expected of them, and know how they can achieve a particular grade.

3. The teacher can structure the material so that it is broken down into steps that are easily digestible, and the student can be reinforced for successive approximations of accomplishment. In addition, parents can be used to act as a liaison between the student and school.
4. The teacher can design tests so that the test becomes progressively more difficult. In this way a student is able to experience some success early in the test. The typical result is a lowering of anxiety.
5. The teacher can teach "test wiseness," or how to take a test without pain. The teacher can actively reinforce students for productive academic behaviors (e.g. asking questions when in doubt, rather than sitting quietly and becoming increasingly more anxious), and praise them for efforts as well as successes.
6. The teacher can help students to see more realistic goals of achievement. The anxiety can be reduced with each successful accomplishment, providing that goal is appropriate for the student's ability. Goals that are unrealistically high or low typically result in failure, which can become cyclical.
7. The students need to be shown how to break obsessional thought patterns which have a deleterious effect on achievement. For example, teaching students to say to themselves, "If I don't understand, I will ask for help," instead of "I have to make a good grade or I'll be a bad person."
8. The teacher can base grades on a number of criteria such as tests responses, daily work and presentations so that no one evaluative method can prevent them from making a good grade.

9. The teacher can provide alternative types of tests or time when tests can be given. For example, letting a student take a test at a time that is less stress producing tends to produce more valid results and still gives the student the responsibility for taking the test.
10. The counselor can provide specific theraputic techniques that have been shown to be effective in the reduction of performance anxiety (e.g. Systematic Desensitization).

CONCLUSION

In conclusion, it is important to note that there are no panaceas to solve the problems of stress. There do exist remediation strategies that appear to be effective in the reduction of stress, and in turn, the facilitation of personal satisfaction with life. An important variable to consider in the remediation process, is the quality of rapport established in the counseling relationship. It is vital that the facilitator possess the personality characteristics of warmth, empathy and genuineness in order to facilitate the reduction of stress in students.

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